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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,046	05/21/2002	Johan Smets	CM2108/DQ	4883

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EXAMINER

PROUTY, REBECCA E

ART UNIT	PAPER NUMBER
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1652

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/806,046	Applicant(s) SMETS ET AL.	
	Examiner Rebecca E. Prouty	Art Unit 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 4-8 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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The references cited in the Search Report mailed by the EPO on 9/16/99 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 CFR 1.98(a)(1). In order to have the references printed on such resulting patent, a separate listing, preferably on a PTO-1449 form, must be filed within the set period for reply to this Office action.

Applicant's election with traverse of the a chemical entity comprised of the cellulose binding domain (CBD) from the 43kDa endoglucanase of *Humicola insolens* DSM1800 and a bleaching agent as the chemical component in the response filed 7/6/04 is acknowledged. The traversal is on the ground(s) that there was no lack of unity requirement made in the international phase, that all the claims share the common technical feature of a CBD that is especially adapted to selectively bind cotton fibers, i.e. crystalline cellulose and that there would be no additional burden of search for the examination of all species.

Applicant's arguments have been fully considered but are not deemed persuasive to withdraw the restriction requirement previously applied. With regard to the finding of unity of invention in the international phase, it is noted that even if

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the International Authority found unity of invention regarding the instant claims, according to 37 CFR 1.499, if the Examiner finds that a national stage application lacks unity of invention under 37 CFR 1.475, the Examiner may in an Office action require the applicant in the response to that action to elect an invention to which the claims shall be restricted. Such requirement may be made before any action on the merits but may be made at any time before the final action at the discretion of the Examiner. The opinion of the international phase examiner is not binding on the national phase examiner. Applicants argument that all the claims share the common special technical feature of a CBD that is especially adapted to selectively bind cotton fibers, i.e. crystalline cellulose is not persuasive as this shared technical feature of applicants claims is not a special technical feature as defined by PCT Rule 13.2 as it does not define a contribution over the art. Von der Osten et al. (WO 97/28243) teach fusions of cellulose binding domains including the CBDs of the 43kDa endoglucanase of *Humicola insolens* DSM1800 and *Cellulomonas fimi* cenA to a variety of chemical components. The CBD of the 43kDa endoglucanase of *Humicola insolens* DSM1800 is disclosed in the instant specification to have the claimed binding constant for

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crystalline cellulose while the binding constant of the CBD of *Cellulomonas fimi* *cenA* to crystalline cellulose is shown by Gilkes et al. to be 45.3 ± 2.1 l/g cellulose. As such the use of a CBD having the disclosed affinity for crystalline cellulose in fusions as claimed is not a contribution of the instant invention over the art. Finally, applicants argument that search of all species would not impose an undue burden on the examiner is not agreed with. Coexamination of all the species of CBDs would require individual searches for each CDB to determine which of them meet the claimed limitations with regard to binding crystalline cellulose. This clearly would impose an undue burden on the examiner as such properties of enzymes often vary significantly even among highly related enzymes and the characterization of the properties of each species are unlikely to be found together. Furthermore, the search for the distinct species of chemical components would require an undue burden on the examiner, as it would require the examiner to find art for each species to suggest why a skilled artisan would link that chemical component to a CBD. These reasons would be linked to the known uses for each chemical component and the linkage of one chemical component to a CBD would not necessarily suggest linking a different chemical component to a CBD unless they

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shared a common utility. It is noted that chemical components with common uses were grouped together in the election of species requirement.

The requirement is still deemed proper and is therefore made FINAL.

Applicants identified Claims 1-12 as reading on the elected species. However, Claim 4, from which Claims 5-8 depend is limited to chemical entities comprising a CBD from a bacterial strain of Family II, III, or IV. As the elected species of CBD is a fungal Family I CBD, these claims do not read on the elected species.

Claims 4-8 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/6/04.

Claims 9, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 9 lacks antecedent basis for "said linking region" as the chemical entity of claim 1 from which it depends is not defined as including a linking region.

The term "weak bond" in claim 9 is a relative term which renders the claim indefinite. The term "weak" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. No definition what types of bonds are "weak" or "strong" is present in the specification.

Claims 13 and 14 are indefinite in the recitation of "a chemical entity or with a laundry detergent and/or fabric care composition according to claim 12" as claim 12 does not recite a chemical entity.

Claims 1-3 and 9-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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These claims are directed to a genus of chemical entity comprising a genus of cellulose binding domains (CBDs) having a binding constant for crystalline cellulose of at least 10 (or 20) 1/g cellulose and/or a binding constant for Avicel and/or for amorphorous cellulose of at least 1.5 (or 5) 1/g cellulose. The specification teaches the structure of only three representative species of such CBDs. Moreover, the specification fails to describe any other representative species by any identifying characteristics or properties other than the functionality of binding cellulose with the disclosed affinities. Given this lack of description of representative species encompassed by the genus of the claim, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by van der Osten et al. (WO 97/28243).

Van der Osten et al. disclose fusion proteins of a CBD to an enzyme having use within detergent or fabric care compositions wherein the addition of the CBD increases the affinity of the enzyme for binding to a cellulosic fabric or textile (see particularly pages 1-2). Van der Osten et al. further teach detergent and fabric care compositions including the CBD/detergent enzyme fusions and the use of the fusion proteins and compositions for fabric care. These compositions

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can be formulated as laundry additive compositions and compositions suitable for use in the pretreatment of stained fabrics. (see page 48). Van der Osten et al. do not disclose the binding constant of the CBDs used in the disclosed hybrid enzymes. However, the binding constant of any CBD for crystalline cellulose is an inherent property of the CBD which depends on the specific structure of the individual CBD. The specific CBDs of the fusions of Von der Osten et al. include the CBDs of the 43kDa endoglucanase of *Hemicella insolens* DSM1800 and the CBD of the *Cellulomonas fimi* *cenA* to a variety of chemical components. The CBD of the 43kDa endoglucanase of *Hemicella insolens* DSM1800 is disclosed in the instant specification to have the claimed binding constant for crystalline cellulose while the binding constant of the CBD of *Cellulomonas fimi* *cenA* to crystalline cellulose is shown by Gilkes et al. to be 45.3 ± 2.1 l/g cellulose. The enzymes of the hybrids include enzymes which have known utility as bleaching agents such as amylases, laccases and peroxidases. As such the fusion proteins of van der Osten et al. meet all limitations of the instant claims.

Claims 1-3 and 9-14 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jones (WO 98/00500).

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Jones discloses a protein deposition aid comprising a binding domain of an enzyme having high affinity for fibers, which is disclosed as preferably a CBD (see page 4) linked to a benefit agent having use within detergent or fabric care compositions (see particularly pages 2-4). Jones further teaches detergent and fabric care compositions including the CBD/benefit agent hybrids and the use of the hybrids and compositions for fabric care. Jones do not disclose the binding constant of the CBDs within the disclosed hybrids. However, the binding constant of any CBD for crystalline cellulose is an inherent property of the CBD which depends on the specific structure of the individual CBD. The specific protein deposition aids of the hybrids of Jones include the cellulase from *Trichoderma reesei*, cellulase EG2 from *Trichoderma longibrachiatum*, cellulase EG3 from *Trichoderma longibrachiatum* and cellulase E5 from *Thermonospora fusca* for which the binding constants are not known. Jones clearly discloses that the protein deposition aids comprise a binding domain of an enzyme having high affinity for fibers however such that it appears highly likely that this limitation is met, but without a disclosure of the binding constants of each of these to crystalline cellulose it is not clear if the hybrids of Jones

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meet the limitation of the instant claims to having a binding constant for crystalline cellulose of at least 10 (or 20) 1/g cellulose and/or a binding constant for Avicel and/or for amorphorous cellulose of at least 1.5 (or 5) 1/g cellulose. However, if the exemplified protein deposition aids do not in fact meet this limitation, it would clearly have been obvious to the ordinary skilled artisan to select a CBD having the disclosed binding constant for crystalline cellulose (such as the a *Cellulomonas fimi* cenA CBD disclosed by Gilkes et al.) as the protein deposition aid as the higher the binding constant the greater the expected increase in the deposition of the benefit agent on the surface of the fabrics would be as tighter binding would allow release of the benefit agent under fewer conditions. As such the instant rejection is made alternatively under both 102 and 103. Since the Office does not have the facilities for examining and comparing applicants' hybrids with the hybrids of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the hybrid of the prior art does not possess the same material structural and functional characteristics of the claimed hybrid). See In re Best, 562

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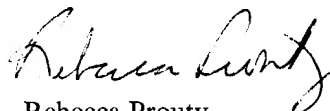
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F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al.,
205 USPQ 594.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca Prouty, Ph.D. whose telephone number is (571) 272-0937. The examiner can normally be reached on Monday-Friday from 8:30 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (571) 272-0928. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.



Rebecca Prouty
Primary Examiner
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